

# TIME TRENDS IN RESIDENTIAL DUST CONCENTRATIONS OF POLYCYCLIC AROMATIC HYDROCARBONS

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**Background and Aims:**

Exposure information gathered after diagnosis in case-control studies is often used to estimate exposures that occurred before diagnosis. For diseases with long latency periods, the delay between exposure and diagnosis presents a challenge for retrospective exposure assessment. The goal of the study is to examine time trends in dust concentrations of polycyclic aromatic hydrocarbons (PAHs) from households participating in the Northern California Childhood Leukemia Study, and assess whether current dust concentrations of PAHs are predictive of past contamination levels.

**Methods:**

Household vacuum cleaner contents were sampled twice from 203 homes during years 2001-2007 (initial sampling) and 2010 (repeat sampling). Samples (0.2 g) of fine ( $<150\mu\text{m}$ ) dust were spiked with an internal standard [ $\text{d}^{12}$ -benzo(a)pyrene], extracted by accelerated solvent extraction, chromatographically purified, solvent-exchanged into tetradecane, and spiked with a recovery standard ( $\text{d}^{10}$ -pyrene). Eight PAHs were analyzed using gas chromatography-mass spectrometry. Using mixed-effects models we will test for trends in PAH levels while estimating the within- and between-household variance components of PAH concentrations in residential dust.

**Results:**

To date, we have analyzed 116 initial dust samples and will complete analyses for all initial and repeat samples ( $n=203 \times 2$ ). Because the analyst must be blinded to residential identities while conducting laboratory work, analysis of time trends cannot be conducted until all samples have been analyzed. Time trend results will be presented at the conference. From preliminary analyses, median concentrations for benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene in these 116 households were 29, 90, 61, 34, 38, 42, 9, and 98 ng/g, respectively.

**Conclusions:**

By sampling home dust during two distinct periods, we will evaluate household changes in PAH contamination over up to 10 years and assess the suitability of using post-diagnosis concentrations of PAHs in residential dust to estimate pre-diagnosis exposure levels in a case-control study of childhood leukemia.